

AMENDMENTS TO THE CLAIMS

Please amend claim 24 as follows and please add new claim 45. Following is a listing of the claims, as amended.

1-23. (Canceled)

24. (Currently Amended) A method for the deposition of a thin film of a pre-determined composition onto a substrate, said composition comprising a ternary, quaternary or higher composition, comprising the steps of:

- (i) placing a first deposit at a first source of a vapour deposition apparatus and placing a second deposit at a second source of the vapour deposition apparatus, said first and second deposits being different, components of said first and second deposits in combination forming said pre-determined composition;
- (ii) simultaneously effecting vapour deposition of said first and second deposits and determining temporal variation of the deposition of said components from said first and second deposits onto said substrate from said first and second sources; and, wherein said temporal variation of each of said first and second deposits is independently controlled by independently monitoring and continuously varying the rates of deposition of said components of said first and second deposits onto said substrate
- ~~(iii) using said temporal variation for controlling said first and second sources so as to obtain continuous homogeneous temporal deposition of said composition on the said substrate by simultaneous vapour deposition from said sources.~~

25. (Previously presented) The method of Claim 24 in which said temporal variation is obtained by monitoring the rate of vaporizing from the first source with a first coating rate monitor and monitoring the rate of vaporizing from the second source with a second coating rate monitor, said first coating rate monitor being shielded from deposition from the second source and said second coating rate monitor being shielded from deposition from the first source.

26. (Previously presented) The method of Claim 25 in which said monitoring is used as the determining of temporal deposition of step (ii).
27. (Previously presented) The method of Claim 26 in which said monitoring of step (ii) is used in step (iii).
28. (Previously presented) The method of Claim 24 in which said composition is a thin film phosphor.
29. (Previously presented) The method of Claim 28 in which said composition is selected from the group consisting of thioaluminates, thiogallates and thioindates of at least one cation from Groups IIA and IIB of the Periodic Table.
30. (Previously presented) The method of Claim 24 in which the composition is a dielectric thin film.
31. (Previously presented) The method of Claim 30 in which there is the additional step of depositing a phosphor juxtaposed to said dielectric film.
32. (Previously presented) The method of Claim 24 in which the first and second deposits are sulphides.
33. (Previously presented) The method of Claim 24 in which a third deposit is placed at a third source, components of said third deposit forming part of said composition.
34. (Previously presented) The method of Claim 24 in which said substrate is opaque in the visible and infrared regions of the electromagnetic spectrum.
35. (Previously presented) The method of Claim 24 in which said composition is of the formula $\text{Ba}_a\text{Ca}_{1-a}\text{Al}_2\text{S}_4:\text{Eu}$, where "a" is the range of 0 to 1.

36. (Previously presented) The method of Claim 29 in which the cation is selected from the group consisting of barium, calcium, strontium, magnesium, zinc and cadmium, and mixtures thereof.
37. (Previously presented) The method of Claim 24 in which vapour deposition is by sputtering.
38. (Previously presented) The method of Claim 37 in which the composition is a dielectric thin film.
39. (Previously presented) The method of Claim 38 in which vapour deposition is by electron beam.
40. (Previously presented) The method of Claim 39 in which temperature of said first and second sources is controlled.
41. (Previously presented) The method of Claim 24 in which vapour deposition is by thermal evaporation.
42. (Previously presented) The method of Claim 41 in which temperature of said first and second sources is controlled.
43. (Previously presented) The method of Claim 39 in which said composition is of the formula $\text{Ba}_a\text{Ca}_{1-a}\text{Al}_2\text{S}_4:\text{Eu}$, where "a" is the range of 0 to 1.
44. (Previously presented) The method of Claim 39 in which the composition is $\text{CaAl}_2\text{S}_4:\text{Eu}$.

45. (New) A method for the deposition of a thin film of a pre-determined composition onto a substrate, said composition comprising a ternary, quaternary or higher composition, comprising:

- (i) simultaneously effecting vapour deposition of a plurality of deposits of source materials, each of said deposits being different and comprising components that in combination form said pre-determined composition, and
- (ii) determining temporal variation of the deposition of said components from said plurality of deposits onto said substrate, wherein said temporal variation of each of said deposits is independently controlled by independently monitoring and continuously varying the rates of deposition of said components of at least one of said deposits onto said substrate to obtain continuous homogeneous temporal deposition of said composition onto said substrate.